The *limit of freezing weather* is shown on Chart VI by the isotherm of minimum 32°, and the limit of frost by the isotherm of minimum 40°.

## MOISTURE.

The *quantity of moisture* in the atmosphere at any time may be expressed by means of the weight contained in a cubic foot of air, or by the tension or pressure of the vapor, or by the temperature of the dew-point. The mean dew-points for each station of the Weather Bureau, as deduced from observations made at 8 a. m. and 8 p. m., daily, are given in Table I.

The *rate of evaporation* from a special surface of water on muslin at any moment determines the temperature of the wet-bulb thermometer, but a properly constructed evaporometer may be made to give the *quantity* of water evaporated from a similar surface during any interval of time. Such an evaporometer, therefore, would sum up or integrate the effect of those influences that determine the temperature as given by the wet bulb; from this quantity the *average humidity of the air* during any given interval of time may be deduced.

*Sensible temperatures.*—The sensation of temperature experienced by the human body and ordinarily attributed to the condition of the atmosphere depends not merely on the temperature of the air, but also on its dryness, on the velocity of the wind, and on the suddenness of atmospheric changes, all combined with the physiological condition of the observer. The condition of the atmosphere as to moisture is so important that it has, by exaggeration, been sometimes considered as a controlling feature and the temperature of the wet-bulb thermometer, when whirled in the shade, has been called the sensible temperature, although this is often but a partial index of the sensation of temperature. In order to present a monthly summary of the atmospheric conditions on which hygienic and physiological phenomena depend, the moisture must be fully considered, and therefore Table VIII has been prepared, showing the maximum, minimum, and mean readings of the wet-bulb thermometer at 8 a. m. and 8 p. m., seventy-fifth meridian time. A complete expression for the relation between atmospheric conditions and nervous sensations is under consideration, but has not yet been obtained.

## PRECIPITATION.

[In inches and hundredths.]

The *distribution of precipitation* for the current month, as determined by reports from about 2,500 stations, is exhibited on Chart III. The numerical details are given in Tables I, II, and III.

The precipitation for the current month was heaviest, 20.00 to 24.00, on the southeast coast of the Florida Peninsula; but least, namely, between 0.00 and 0.5, over all the region, with a few local exceptions, between the Lake Region and the Ohio Valley, westward to Wyoming and Montana, and thence throughout the Rocky Mountain Plateau and Pacific Coast regions.

The *diurnal variation* is shown by Table XII, which gives the total precipitation for each hour of seventy-fifth meridian time, as deduced from self-registering gauges kept at about 43 regular stations of the Weather Bureau; of these 37 are float gauges and 6 are weighing gauges.

The *normal precipitation* for each month is shown in the Atlas of Bulletin C, entitled "Rainfall and Snow of the United States, compiled to the end of 1891, with annual, seasonal, monthly, and other charts."

The *current departures* from the normal precipitation are given in Table I, which shows that there was an excess in the Florida Peninsula, but a deficiency everywhere else, a few localities only excepted. Large excesses were: Jupiter, 15.9; Meridian, 1.9; Pueblo and Abilene, 1.1. The large deficits were: Tatoosh Island, 7.9; Neah Bay. 11.0; Astoria, 6.4; Fort Canby and Jacksonville, 5.1; Charleston and Hatteras, 3.6; Eastport, 3.5.

*The average departure* for each district is also given in Table I. By dividing these by the respective normals the following corresponding percentages are obtained (precipitation is in excess when the percentages of the normals exceed 100):

Above the normal: South Atlantic, 178; Abilene (southern Slope), 136; southern Plateau, 112.

Below the normal: New England, 69; Middle Atlantic, 73; South Atlantic, 36; east Gulf, 72; west Gulf, 64; Ohio Valley and Tennesse, 43; lower Lake, 54; upper Lake, 33; North Dakota, 22; upper Mississippi, 14; Missouri Valley, 12; northern Slope, 62; middle Slope, 78; middle Plateau, 40; northern Plateau, 1; north Pacific, 8; middle Pacific, 8; southern Pacific, 35.

*The years of greatest and least precipitation* for October are given in the REVIEW for October, 1894. The precipitation for the current month was the greatest on record only at Jupiter, 21.03. It was the least on record at: Eastport, 1.15; Northfield, 0.45; Port Huron, 0.85; Alpena, 0.77; Grand Haven, 0.43; Duluth, 0.09; Pierre, trace; Rapid City, 0.02; Omaha, 0.07; Kansas City, 0.12; St. Louis, 0.23; Salt Lake City, 0.24; Eureka, 0.05; Roseburg, 0.00; Portland, Oreg., trace; Astoria, 0 23; Fort Canby, 0.31; Tatoosh Island, 1.32; Neah Bay, 1.27; Port Angeles, 0.15; Spokane, trace; Walla Walla, 0.00.

The *total accumulated monthly departures* from normal precipitation from January 1 to the end of the current month are given in the second column of the following table; the third column gives the ratio of the current accumulated precipitation to its normal value.

| Districts. | Accumulated departures. | Accumulated precipitation. | Districts. | Accumulated departures. | Accumulated precipitation. |
|---|---|---|---|---|---|
| | *Inches.* | *Per ct.* | | *Inches.* | *Per ct.* |
| Florida Peninsula | + 0.50 | 101 | New England | — 6.60 | 82 |
| Abilene (southern Slope) | + 6.10 | 125 | Middle Atlantic | — 8.40 | 78 |
| Southern Plateau | + 0.50 | 106 | South Atlantic | — 5.40 | 89 |
| | | | East Gulf | — 5.10 | 90 |
| | | | West Gulf | — 6.60 | 83 |
| | | | Ohio Valley and Tenn. | —11.40 | 71 |
| | | | Lower Lakes | — 8.60 | 70 |
| | | | Upper Lakes | — 8.40 | 71 |
| | | | North Dakota | — 1.90 | 89 |
| | | | Upper Mississippi | — 9.00 | 71 |
| | | | Missouri Valley | — 5.20 | 82 |
| | | | Northern Slope | — 0.70 | 95 |
| | | | Middle Slope | — 1.60 | 92 |
| | | | Middle Plateau | — 1.60 | 83 |
| | | | Northern Plateau | — 4.10 | 70 |
| | | | North Pacific | — 7.60 | 83 |
| | | | Middle Pacific | — 2.60 | 88 |
| | | | South Pacific | — 2.80 | 78 |

The total snowfall at each station is given in Table II. Its geographical distribution is given on Chart No. VI of "Total monthly snowfall." The isotherms of minimum 32° and 40° are also shown on this chart.

## HAIL.

The following are the dates on which hail fell at one or more stations in the respective States:

Arizona, 3, 4, 27. California, 15, 16, 20. Illinois, 11. Indian Territory, 27. Iowa, 11. Kansas, 22, 26. Kentucky, 11, 27. Maine, 28. Massachusetts, 17. Michigan, 8. Missouri, 24, 26. Nevada, 15, 19, 20. New York, 9, 17. Ohio, 9, 11, 15, 27. Oklahoma, 27. Utah, 3, 19, 22. West Virginia, 31.

## SLEET.

The following are the dates on which sleet fell at one or more stations in the respective States:

Arkansas, 30. California, 21. Colorado, 22. Georgia, 30. Illinois, 24, 31. Indiana, 31. Iowa, 11. Kansas, 22, 30. Mary-